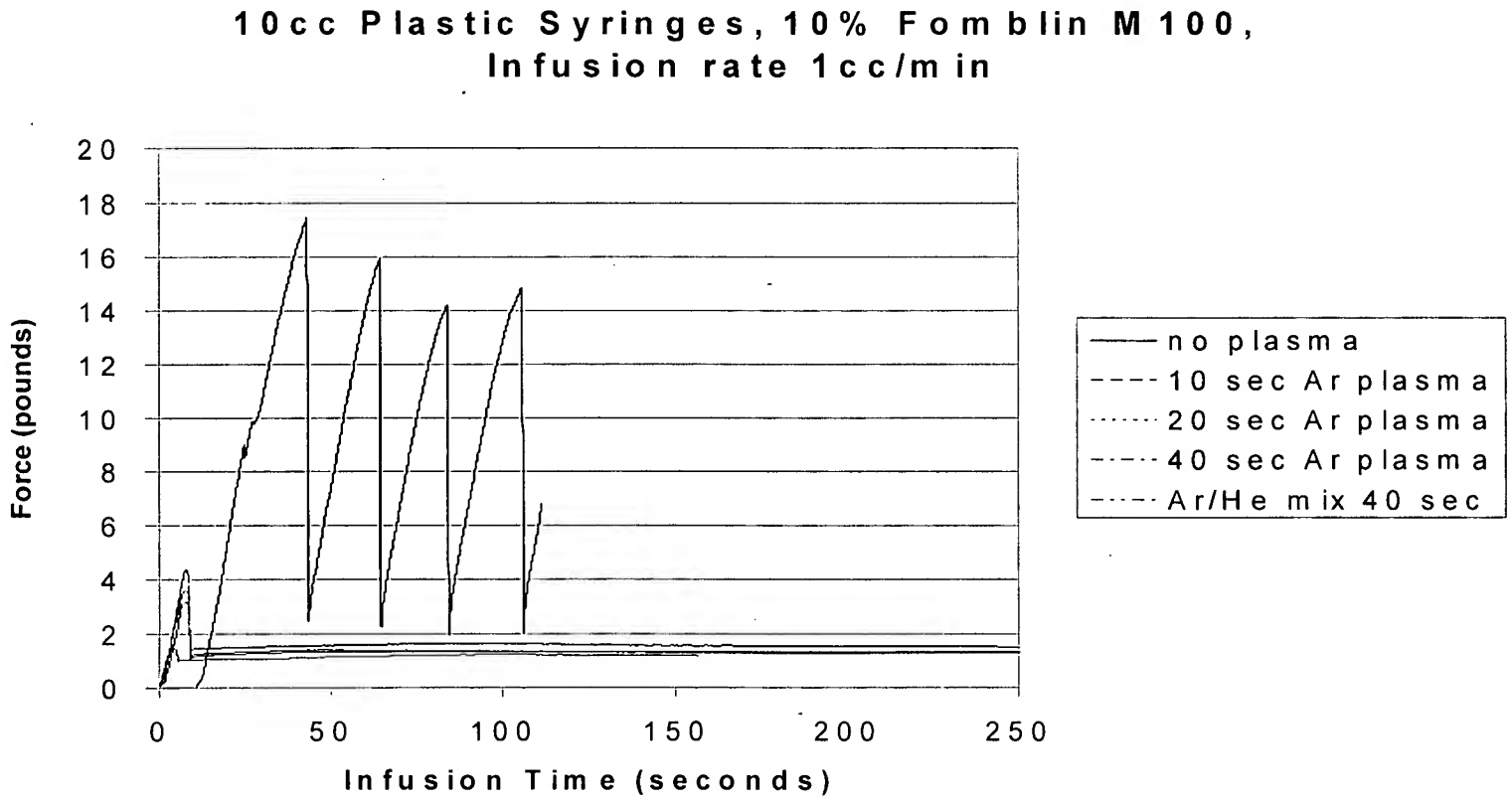
10cc Plastic Syringes, 10% Fomblin M100,
Infusion rate 1cc/min
Force (pounds)
20
18
16
14
12
10
8
6
4
2
0
0
50
100
150
200
250
Infusion Time (seconds)
no plasma
10 sec Ar plasma
20 sec Ar plasma
40 sec Ar plasma
Ar/He mix 40 sec

FIG. 1

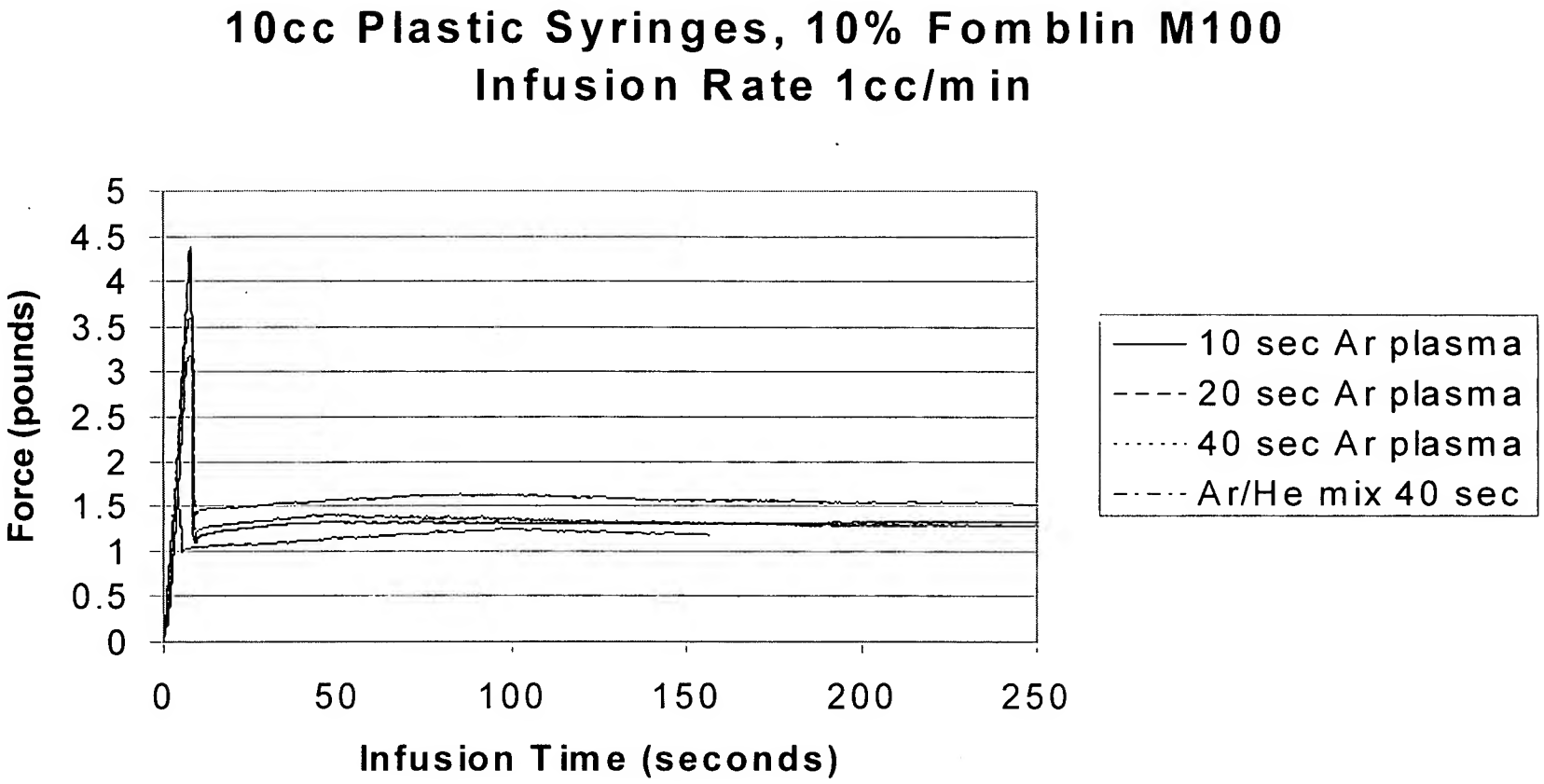
10cc Plastic Syringes, 10% Fomblin M100
Infusion Rate 1cc/min
Force (pounds)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0
50
100
150
200
250
Infusion Time (seconds)
10 sec Ar plasma
20 sec Ar plasma
40 sec Ar plasma
Ar/He mix 40 sec

FIG. 2

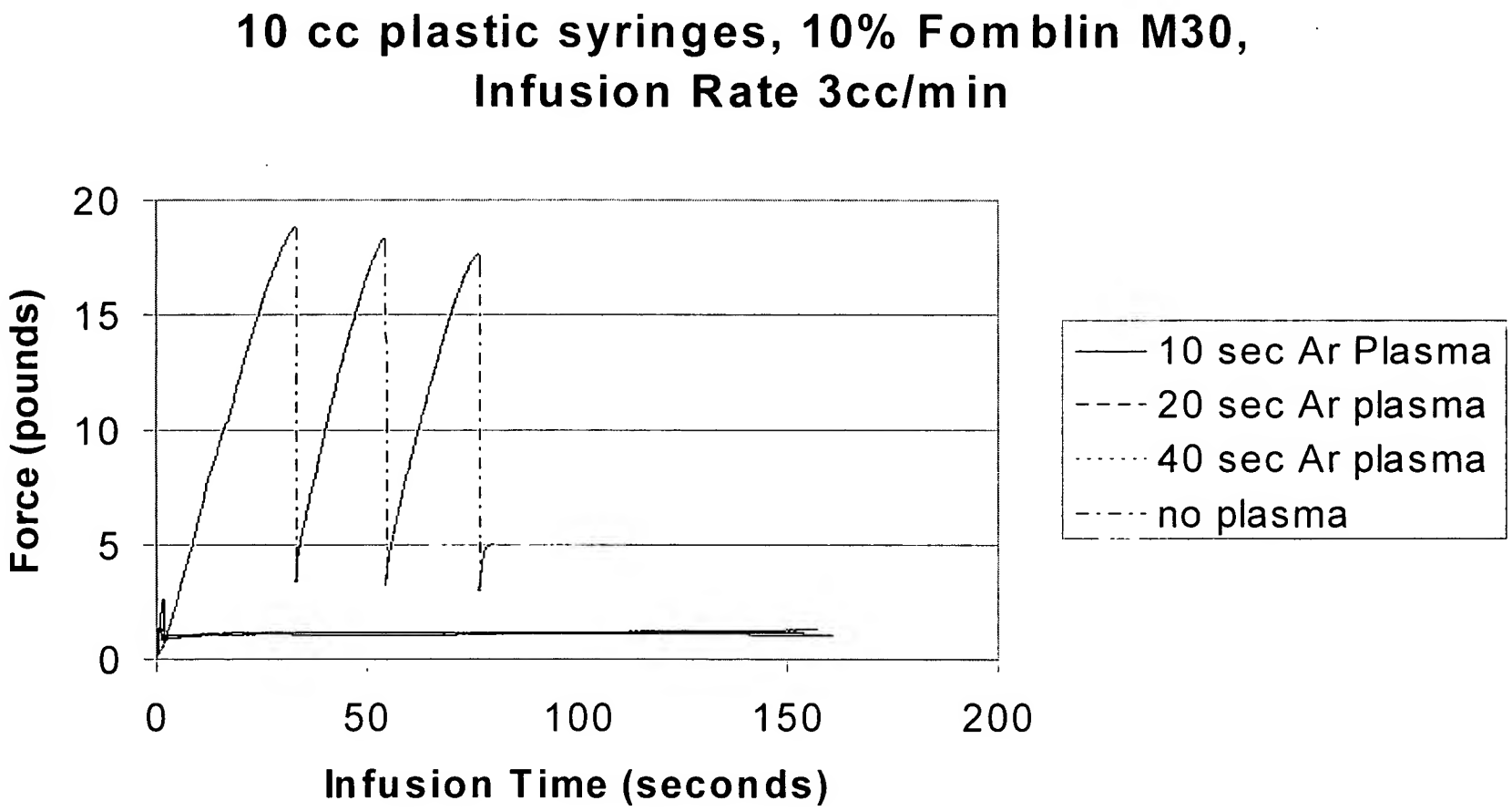
10 cc plastic syringes, 10% Fomblin M30, Infusion Rate 3cc/min
Force (pounds)
20
15
10
5
0
0
50
100
150
200
Infusion Time (seconds)
10 sec Ar Plasma
20 sec Ar plasma
40 sec Ar plasma
no plasma

FIG. 3

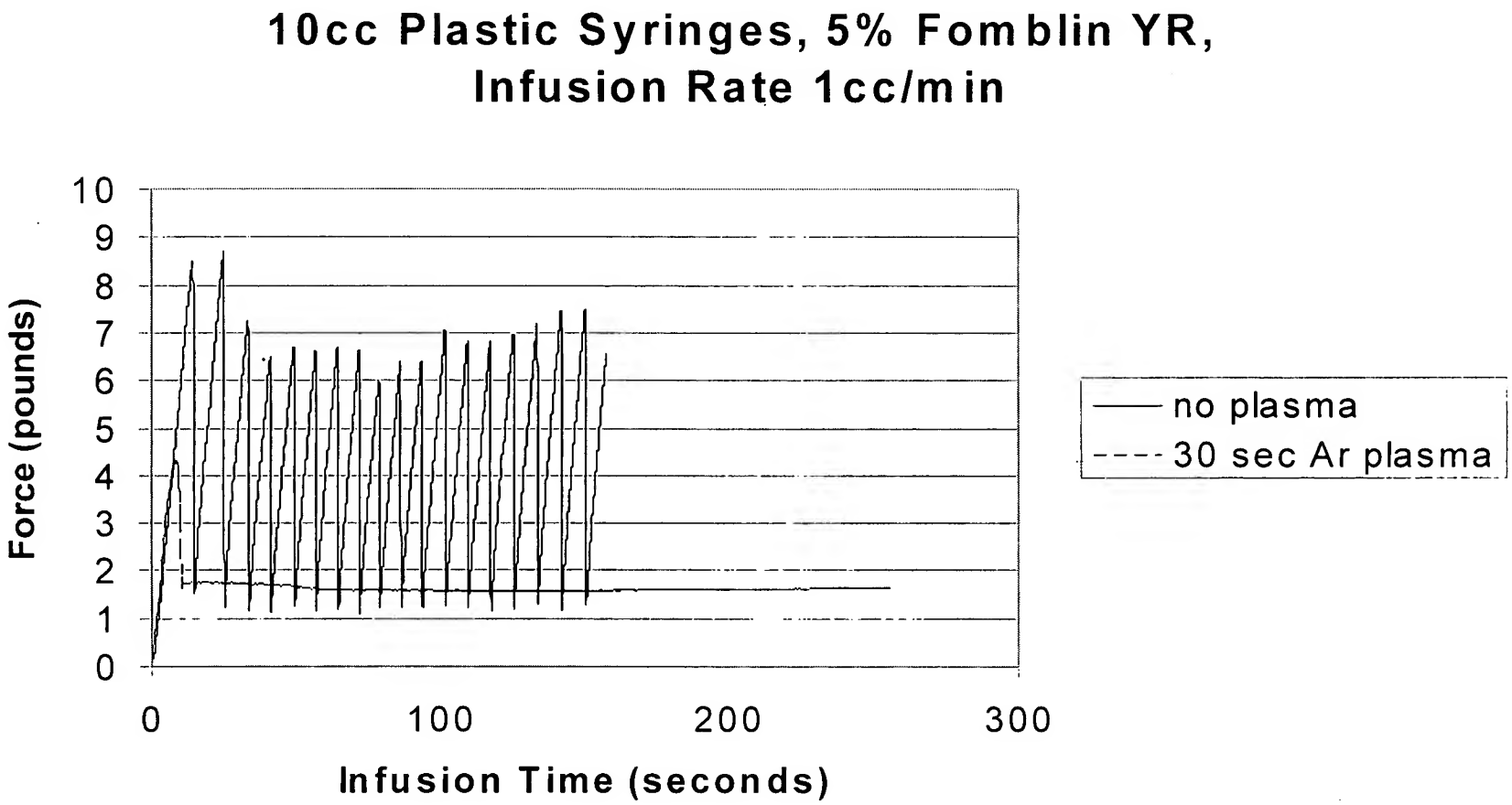
10cc Plastic Syringes, 5% Fomblin YR,
Infusion Rate 1cc/min
Force (pounds)
10
9
8
7
6
5
4
3
2
1
0
0
100
200
300
Infusion Time (seconds)
no plasma
30 sec Ar plasma

FIG. 4

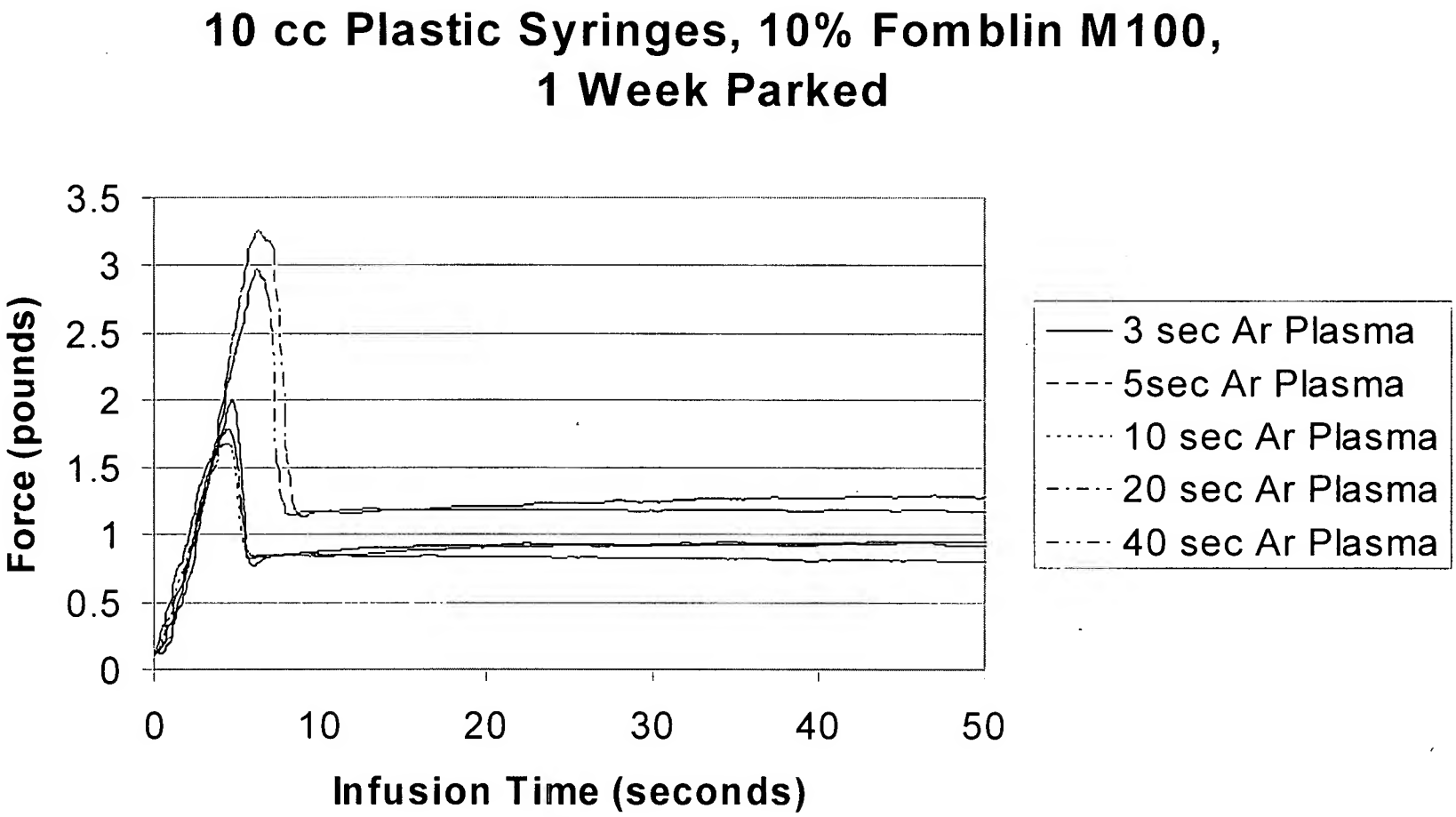
10 cc Plastic Syringes, 10% Fomblin M100,
1 Week Parked
Force (pounds)
3.5
3
2.5
2
1.5
1
0.5
0
0
10
20
30
40
50
Infusion Time (seconds)
3 sec Ar Plasma
5sec Ar Plasma
10 sec Ar Plasma
20 sec Ar Plasma
40 sec Ar Plasma

FIG. 5

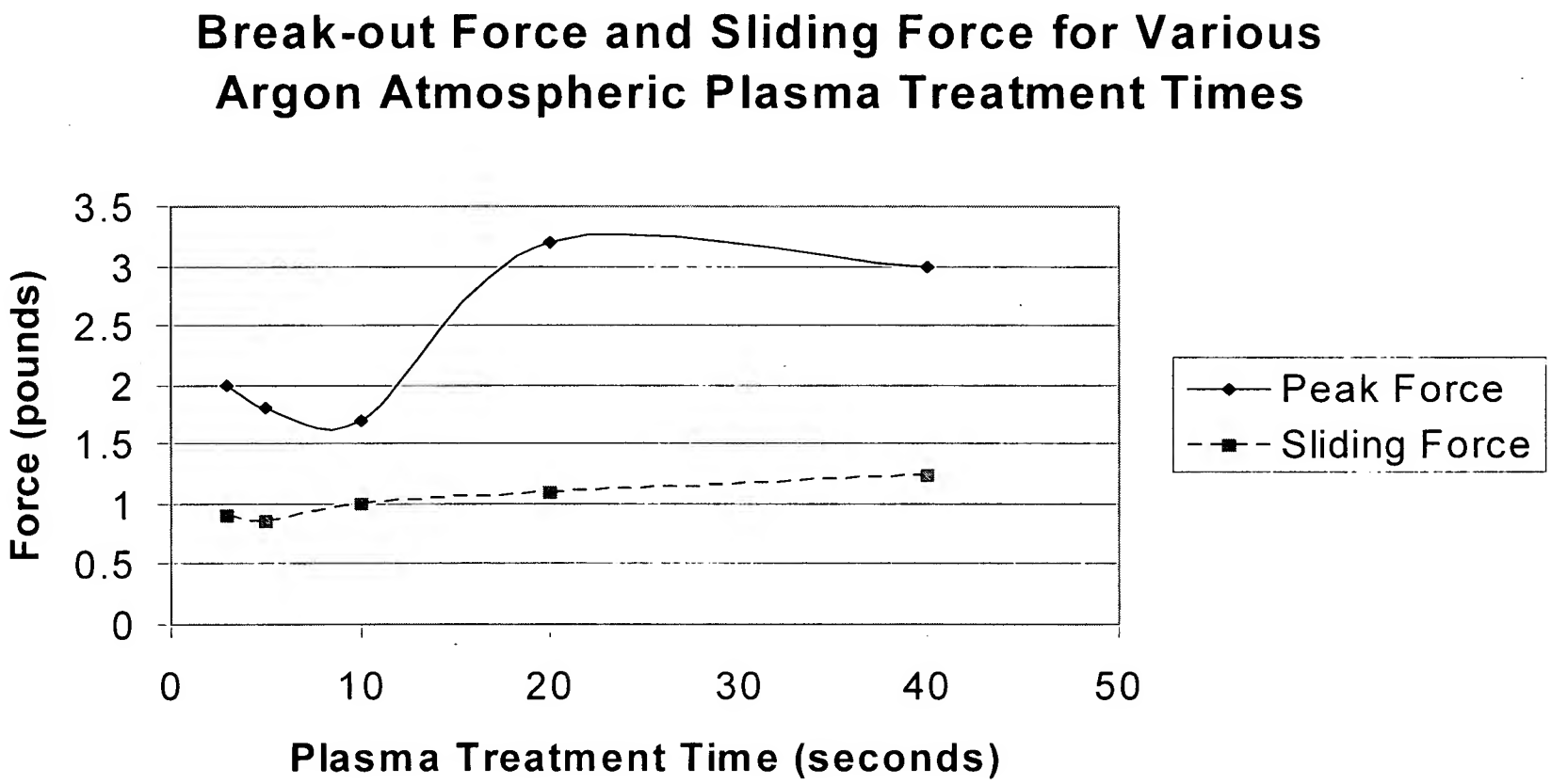
Break-out Force and Sliding Force for Various Argon Atmospheric Plasma Treatment Times
Force (pounds)
3.5
3
2.5
2
1.5
1
0.5
0
0
10
20
30
40
50
Plasma Treatment Time (seconds)
Peak Force
Sliding Force

FIG. 6

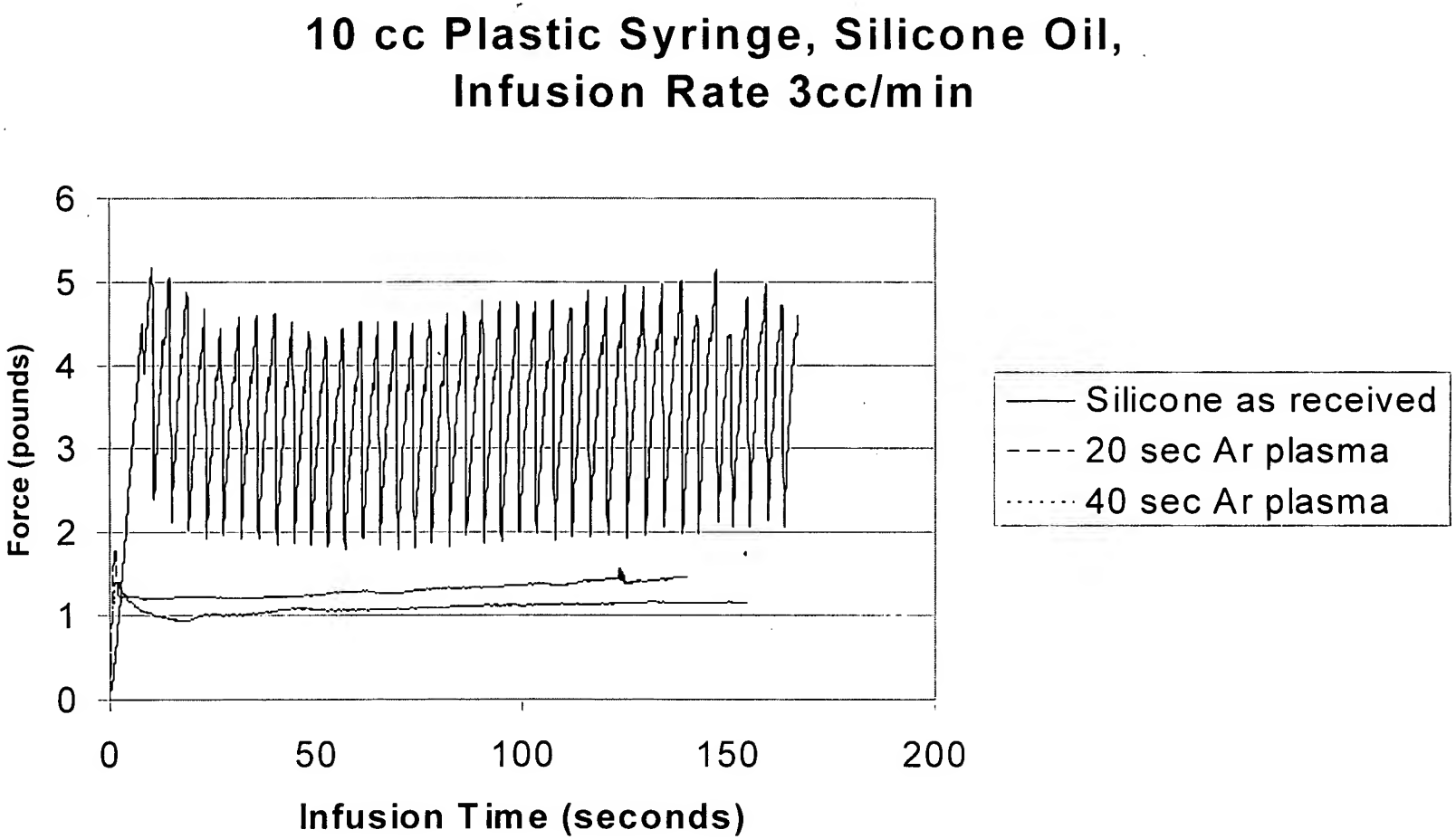
10 cc Plastic Syringe, Silicone Oil,
Infusion Rate 3cc/min
Force (pounds)
0
1
2
3
4
5
6
0
50
100
150
200
Infusion Time (seconds)
Silicone as received
20 sec Ar plasma
40 sec Ar plasma

FIG. 7

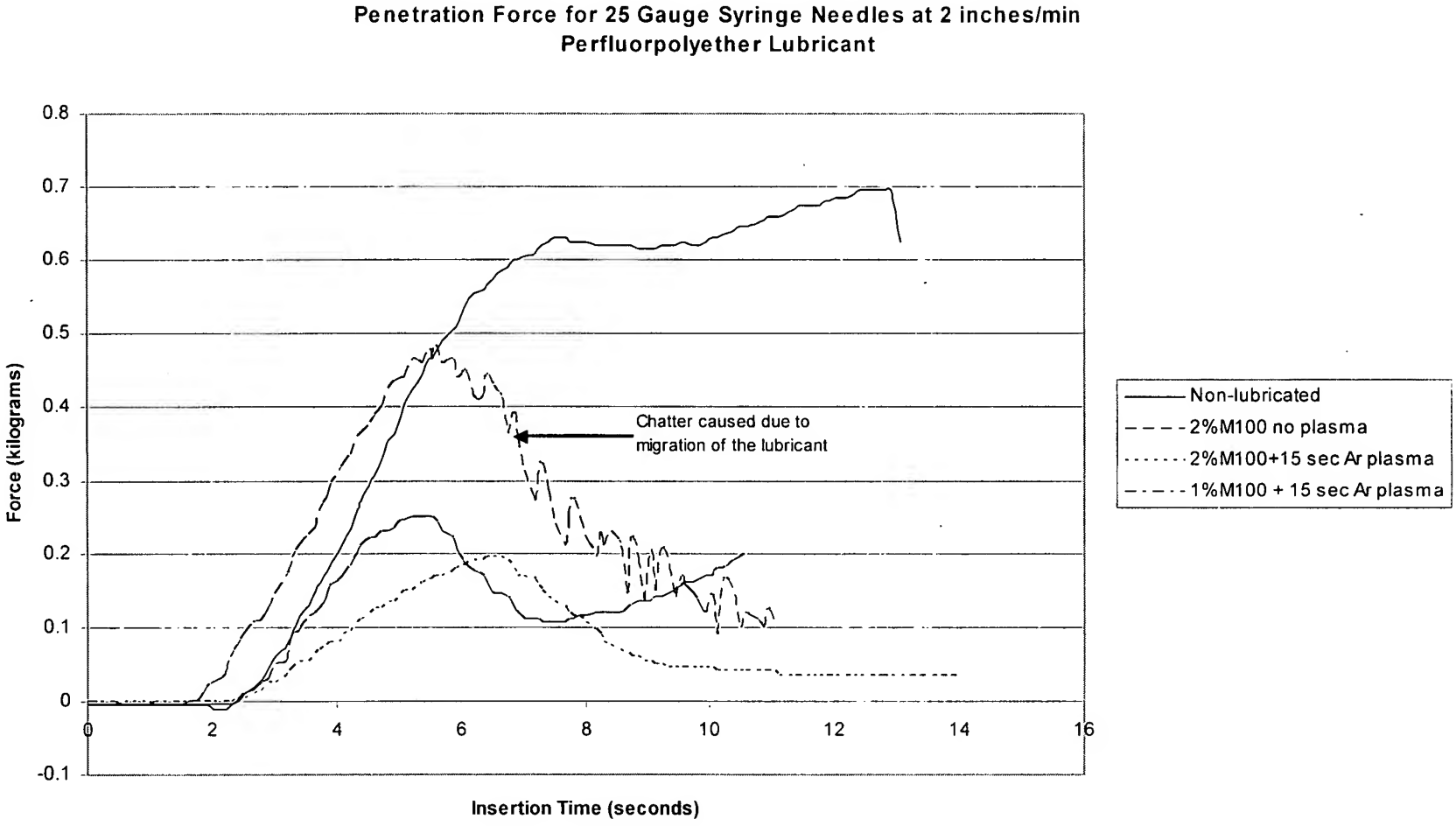
Penetration Force for 25 Gauge Syringe Needles at 2 inches/min
Perfluorpolyether Lubricant
Force (kilograms)
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
0
2
4
6
8
10
12
14
16
Insertion Time (seconds)
Chatter caused due to migration of the lubricant
Non-lubricated
2%M100 no plasma
2%M100+15 sec Ar plasma
1%M100 + 15 sec Ar plasma

FIG. 8

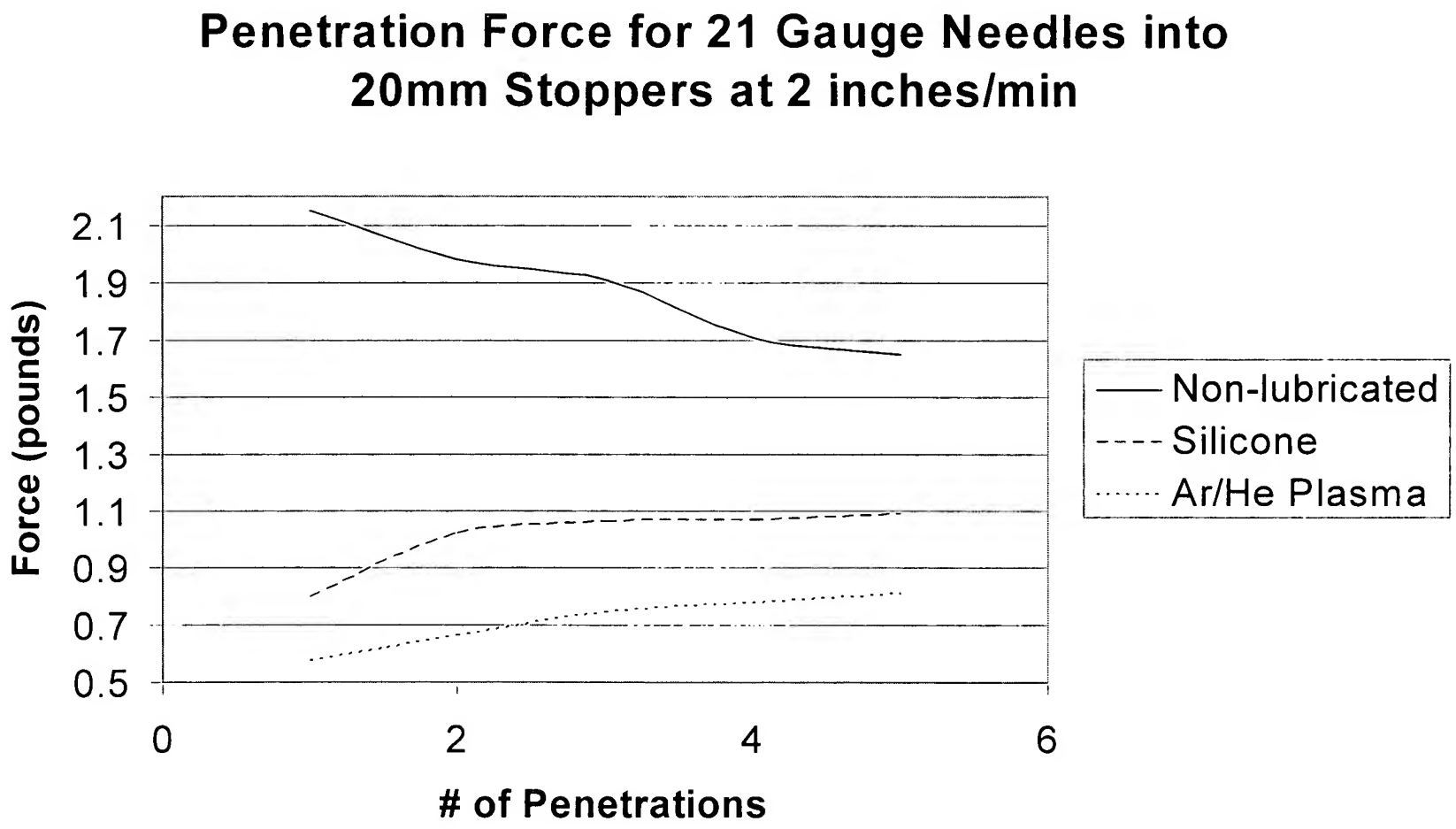
Penetration Force for 21 Gauge Needles into 20mm Stoppers at 2 inches/min
Force (pounds)
2.1
1.9
1.7
1.5
1.3
1.1
0.9
0.7
0.5
0
2
4
6
# of Penetrations
Non-lubricated
Silicone
Ar/He Plasma

FIG. 9

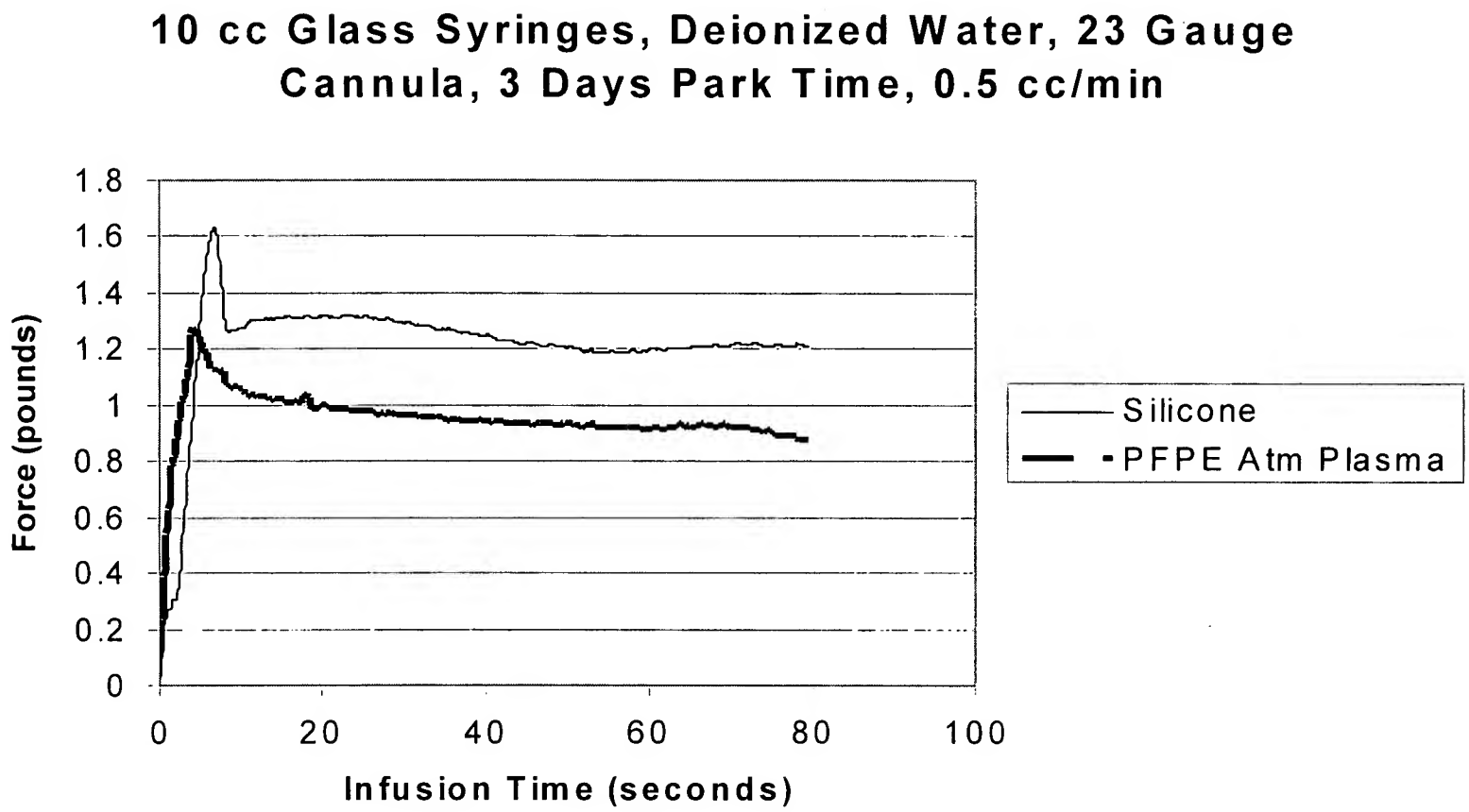
10 cc Glass Syringes, Deionized Water, 23 Gauge Cannula, 3 Days Park Time, 0.5 cc/min
Force (pounds)
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
20
40
60
80
100
Infusion Time (seconds)
Silicone
PFPE Atm Plasma

FIG. 10

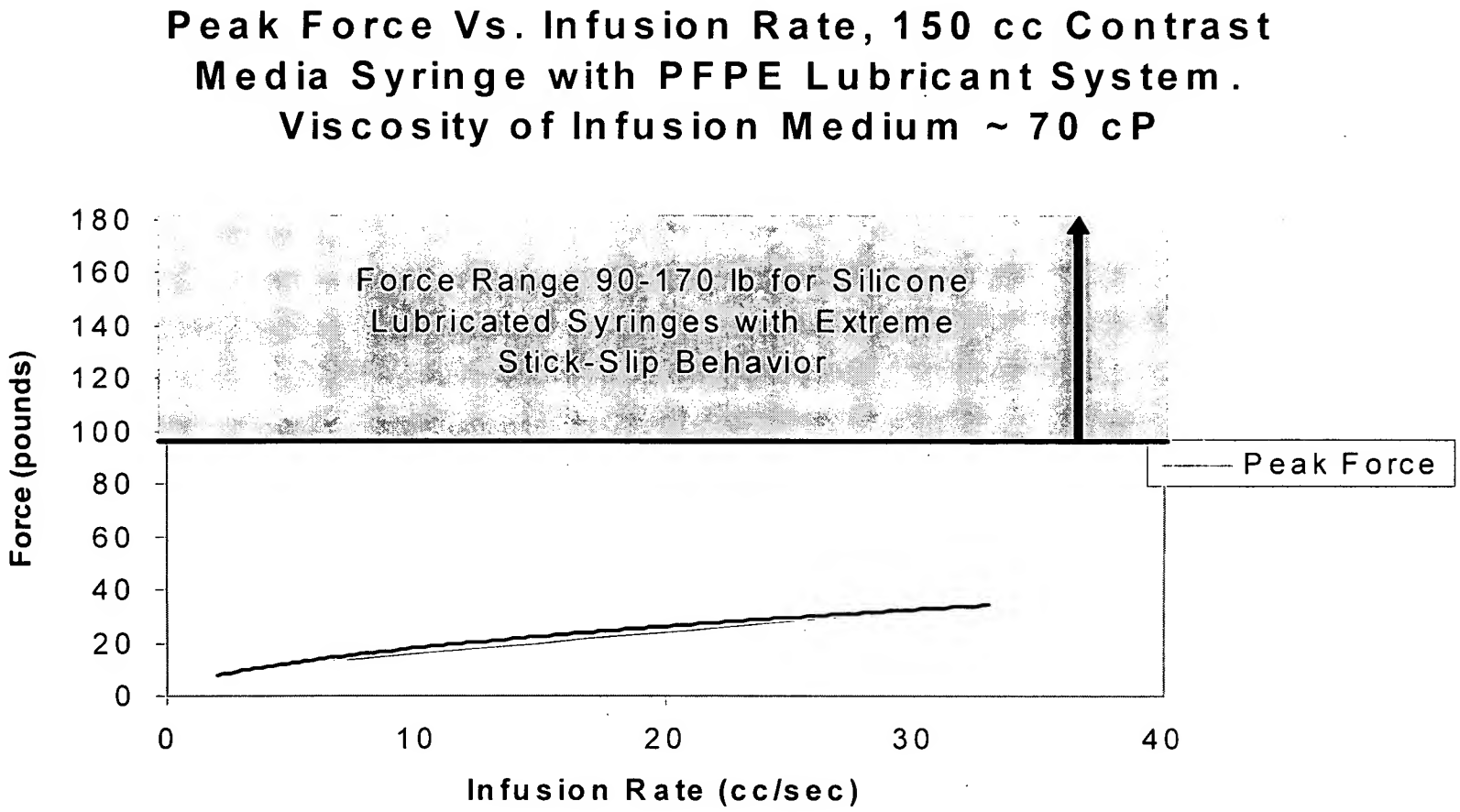
Peak Force Vs. Infusion Rate, 150 cc Contrast Media Syringe with PFPE Lubricant System. Viscosity of Infusion Medium ~ 70 cP
Force Range 90-170 lb for Silicone Lubricated Syringes with Extreme Stick-Slip Behavior
Peak Force
Force (pounds)
180
160
140
120
100
80
60
40
20
0
0
10
20
30
40
Infusion Rate (cc/sec)

FIG. 11

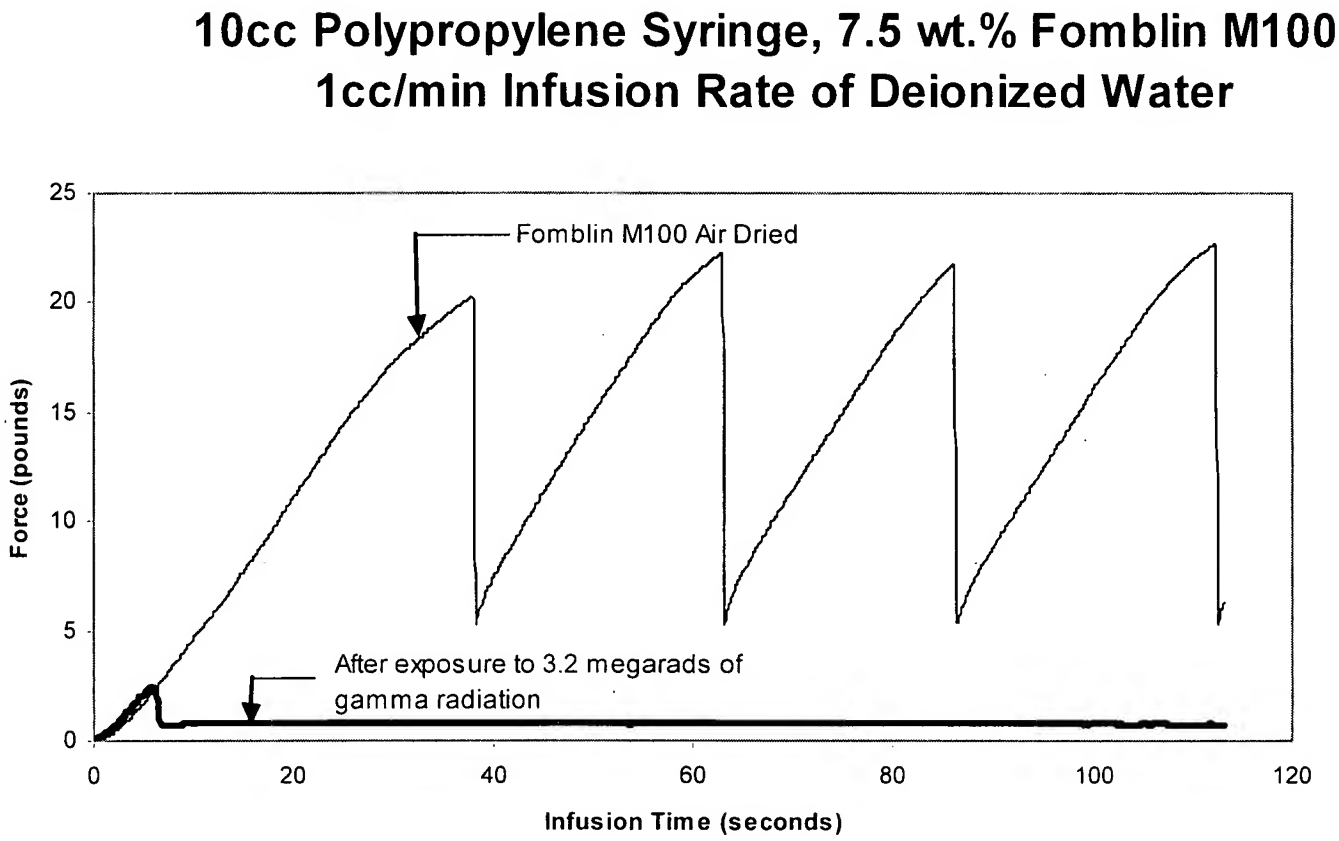
10cc Polypropylene Syringe, 7.5 wt.% Fomblin M100, 1cc/min Infusion Rate of Deionized Water
Fomblin M100 Air Dried
After exposure to 3.2 megarads of gamma radiation
Force (pounds)
Infusion Time (seconds)
0
5
10
15
20
25
0
20
40
60
80
100
120

FIG. 12

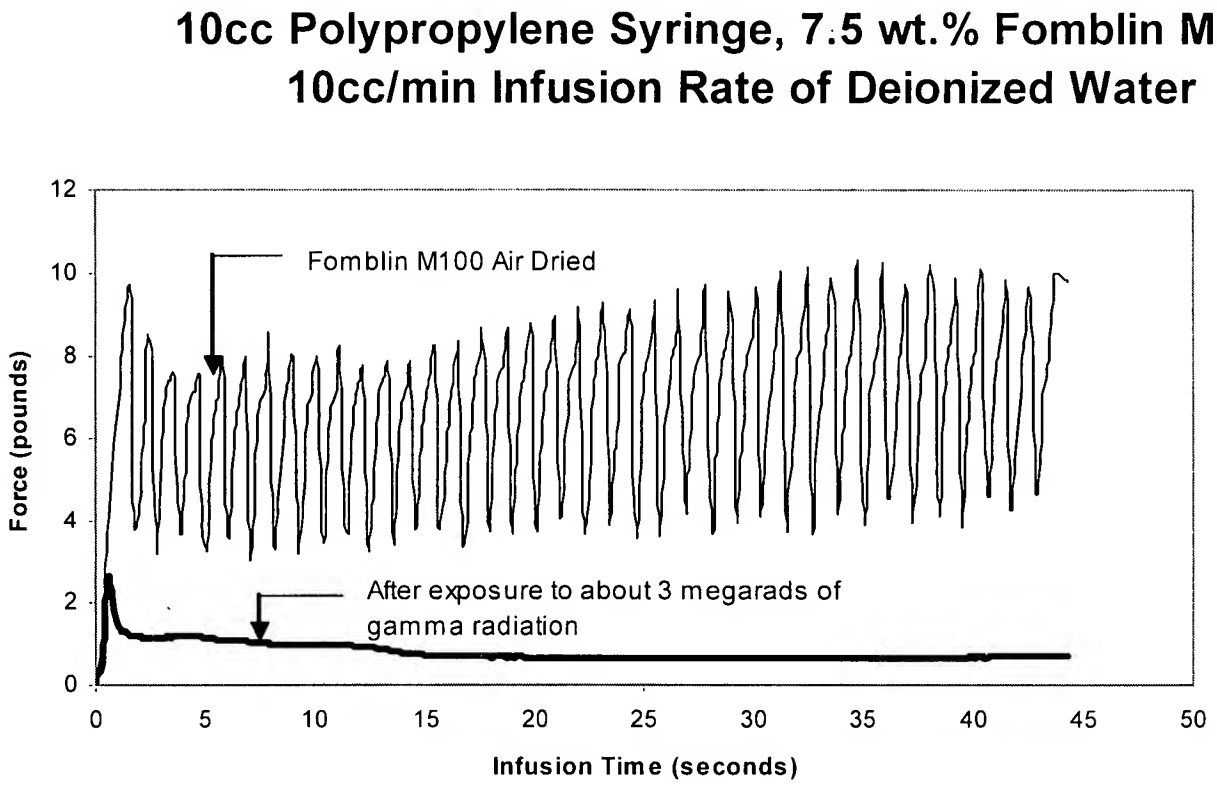
10cc Polypropylene Syringe, 7.5 wt.% Fomblin M100, 10cc/min Infusion Rate of Deionized Water
Fomblin M100 Air Dried
After exposure to about 3 megarads of gamma radiation
Force (pounds)
Infusion Time (seconds)
0
2
4
6
8
10
12
0
5
10
15
20
25
30
35
40
45
50

FIG. 13

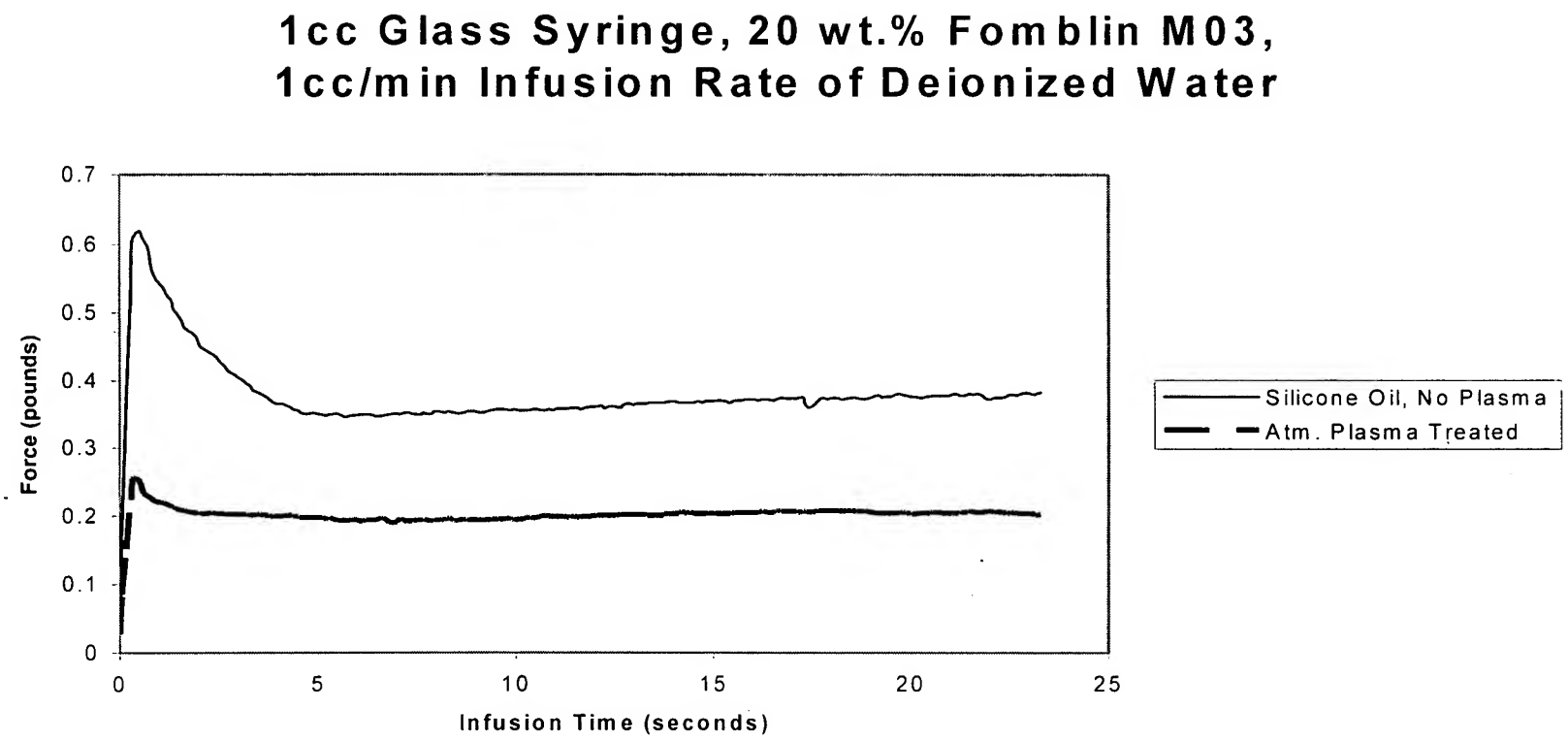
1cc Glass Syringe, 20 wt.% Fomblin M03,
1cc/min Infusion Rate of Deionized Water
Force (pounds)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
5
10
15
20
25
Infusion Time (seconds)
Silicone Oil, No Plasma
Atm. Plasma Treated

FIG. 14